

Fractions and Decimals

EXERCISE : 2.1

1.

i) Total 8 parts, 2 were shaded

$$\therefore \frac{2}{8} \text{th part is shaded i.e. } \frac{2}{8} = \frac{1}{4}$$

ii) Total 10 parts, 3 were shaded

$$\therefore \frac{3}{10} \text{th part is shaded.}$$

iii) Total 12 parts, 5 were shaded.

$$\therefore \frac{5}{12} \text{th part is shaded.}$$

iv) Total 13 parts, 2 were shaded

$$\therefore \frac{2}{13} \text{th part is shaded.}$$

2.

Let the fraction be x

$$x \times 60 = 35$$

$$x = \frac{35}{60}$$

$$x = \frac{7}{12} \text{th fraction.}$$

3.

$$i) 2\frac{7}{9} = 2 + \frac{7}{9} = \frac{2 \times 9 + 7}{9} = \frac{25}{9}$$

$$ii) 5\frac{4}{11} = 5 + \frac{4}{11} = \frac{5 \times 11 + 4}{11} = \frac{59}{11}$$

4.

$$i) \frac{73}{8} = \frac{9 \times 8 + 1}{8} = 9 + \frac{1}{8} = 9\frac{1}{8}$$

$$\begin{array}{r} 8 \overline{)73} \quad (9) \\ \underline{72} \\ 1 \end{array}$$

$$ii) \frac{94}{13} = \frac{13 \times 7 + 3}{13} = 7 + \frac{3}{13} = 7\frac{3}{13}$$

$$\begin{array}{r} 13 \overline{)94} \quad (7) \\ \underline{91} \\ 3 \end{array}$$

5.

$$i) \frac{3}{7} = \frac{x}{35}$$

$$3 \times 35 = 7 \times x$$

$$x = \frac{3 \times 35}{7}$$

$x = 15$ is missing number

$$ii) \frac{5}{x} = \frac{30}{18}$$

$$5 \times 18 = 30 \times x$$

$$x = \frac{5 \times 18}{30}$$

$x = 3$ is missing number

$$\text{iii) } \frac{x}{9} = \frac{56}{72}$$

$$x \times 72 = 9 \times 56$$

$$x = \frac{9 \times 56}{72}$$

81

$x = 7$ is missing number

6

$$\text{i) } \frac{48}{72}$$

HCF of 48 and 72 is 24.

Divide the numerator and Denominator of given fraction by 24.

$$\frac{48}{72} = \frac{48 \div 24}{72 \div 24} = \frac{2}{3}$$

$$\text{ii) } \frac{276}{115}$$

HCF of 276, 115 is 23.

Divide the numerator and Denominator by 23

$$\frac{276}{115} = \frac{276 \div 23}{115 \div 23} = \frac{12}{5}$$

iii) $\frac{72}{336}$

HCF of 72, 336 is 24

Divide numerator and denominator by 24.

$$\frac{72}{336} = \frac{72 \div 24}{336 \div 24} = \frac{3}{14}$$

7

i) LCM of 4, 6, 8 is 24

$$\frac{3}{4} = \frac{3 \times 6}{4 \times 6} = \frac{18}{24}$$

$$\frac{5}{6} = \frac{5 \times 4}{6 \times 4} = \frac{20}{24}$$

$$\frac{7}{8} = \frac{7 \times 3}{8 \times 3} = \frac{21}{24}$$

Thus the given fractions are equivalent to $\frac{18}{24}, \frac{20}{24}, \frac{21}{24}$.

ii) LCM of 25, 10, 40 is 200.

$$\frac{7}{25} = \frac{7 \times 8}{25 \times 8} = \frac{56}{200}$$

$$\frac{9}{10} = \frac{9 \times 20}{10 \times 20} = \frac{180}{200}$$

$$\frac{19}{40} = \frac{19 \times 5}{40 \times 5} = \frac{95}{200}$$

Thus the given fractions are equivalent to $\frac{56}{200}, \frac{180}{200}, \frac{95}{200}$ resp.

$$\begin{array}{r} 2 \overline{) 4, 6, 8} \\ 2 \overline{) 2, 3, 4} \\ 1, 3, 2 \\ = 2 \times 2 \times 2 \times 3 \\ = 24 \end{array}$$

$$\begin{array}{r} 5 \overline{) 25, 10, 40} \\ 2 \overline{) 5, 2, 8} \\ 5, 1, 4 \\ = 5 \times 4 \times 5 \times 2 \\ = 200 \end{array}$$

8.

i) LCM of 9, 3, 21 is 63.

$$\frac{2}{9} = \frac{2 \times 7}{9 \times 7} = \frac{14}{63}$$

$$\frac{2}{3} = \frac{2 \times 21}{3 \times 21} = \frac{42}{63}$$

$$\frac{8}{21} = \frac{8 \times 3}{21 \times 3} = \frac{24}{63}$$

Descending order is $\frac{2}{3}, \frac{8}{21}, \frac{2}{9}$

$$\begin{array}{l} 3 \overline{) 9, 3, 21} \\ \underline{3, 1, 7} \\ = 3 \times 3 \times 7 \\ = 63 \end{array}$$

ii) LCM of 5, 7, 10 = 70

$$\frac{1}{5} = \frac{1 \times 14}{5 \times 14} = \frac{14}{70}$$

$$\frac{3}{7} = \frac{3 \times 10}{7 \times 10} = \frac{30}{70}$$

$$\frac{7}{10} = \frac{7 \times 7}{10 \times 7} = \frac{49}{70}$$

Descending order is $\frac{7}{10}, \frac{3}{7}, \frac{1}{5}$

$$\begin{array}{l} 5 \overline{) 5, 7, 10} \\ \underline{1, 7, 2} \\ = 5 \times 2 \times 7 \\ = 70 \end{array}$$

9

i) LCM of 7, 8, 14, 21 is 168

$$\frac{5}{7} = \frac{5 \times 24}{7 \times 24} = \frac{120}{168}$$

$$\frac{3}{8} = \frac{3 \times 21}{8 \times 21} = \frac{63}{168}$$

$$\begin{array}{l} 7 \overline{) 7, 8, 14, 21} \\ 2 \overline{) 1, 8, 2, 3} \\ \underline{1, 4, 1, 3} \\ = 7 \times 2 \times 4 \times 3 \\ = 168 \end{array}$$

$$\frac{9}{14} = \frac{9 \times 12}{14 \times 12} = \frac{108}{168}$$

$$\frac{20}{21} = \frac{20 \times 8}{21 \times 8} = \frac{160}{168}$$

Ascending order is $\frac{3}{8}, \frac{9}{14}, \frac{5}{7}, \frac{20}{21}$

ii) LCM of 18, 15, 24, 12 is 360.

$$\frac{13}{18} = \frac{13 \times 20}{18 \times 20} = \frac{260}{360}$$

$$\frac{8}{15} = \frac{8 \times 24}{15 \times 24} = \frac{192}{360}$$

$$\frac{17}{24} = \frac{17 \times 15}{24 \times 15} = \frac{255}{360}$$

$$\frac{7}{12} = \frac{7 \times 30}{12 \times 30} = \frac{210}{360}$$

Ascending order is $\frac{8}{15}, \frac{7}{12}, \frac{17}{24}, \frac{13}{18}$

$$\begin{array}{r|l} 3 & 12, 15, 18, 24 \\ \hline 2 & 4, 5, 6, 8 \\ \hline 2 & 2, 5, 3, 4 \\ \hline & 1, 5, 3, 2 \\ \hline \end{array}$$
$$= 3 \times 2 \times 2 \times 5 \times 3 \times 2$$
$$= 360$$

EXERCISE : 2.2

f.

i) $\frac{4}{3} + \frac{7}{8}$

Lcm of 3, 8 is 24

$$= \frac{4 \times 8 + 7 \times 3}{24}$$

$$= \frac{32 + 21}{24} = \frac{53}{24}$$

ii) $8\frac{1}{2} - 3\frac{5}{8}$

$$8\frac{1}{2} = 8 + \frac{1}{2} = \frac{8 \times 2 + 1}{2} = \frac{16 + 1}{2} = \frac{17}{2}$$

$$3\frac{5}{8} = 3 + \frac{5}{8} = \frac{3 \times 8 + 5}{8} = \frac{24 + 5}{8} = \frac{29}{8}$$

$$= \frac{17}{2} - \frac{29}{8}$$

$$= \frac{17 \times 4 - 29 \times 1}{8}$$

$$= \frac{68 - 29}{8}$$

$$= \frac{39}{8}$$

iii) $\frac{5}{12} + \frac{1}{18} - \frac{2}{9}$

Lcm of 12, 18, 9 is 36

$$\begin{array}{r|l} 3 & 12, 18, 9 \\ 3 & 4, 6, 3 \\ 2 & 4, 2, 1 \\ & 2, 1, 1 \end{array}$$

$$\begin{aligned}
 &= \frac{5 \times 3 + 1 \times 2 - 2 \times 4}{36} \\
 &= \frac{15 + 2 - 8}{36} \\
 &= \frac{9}{36} \\
 &= \frac{1}{4}
 \end{aligned}$$

2

$$\begin{aligned}
 \text{i) } 7\frac{3}{4} &= 7 + \frac{3}{4} = \frac{7 \times 4 + 3}{4} = \frac{28 + 3}{4} = \frac{31}{4} \\
 3\frac{5}{6} &= 3 + \frac{5}{6} = \frac{3 \times 6 + 5}{6} = \frac{18 + 5}{6} = \frac{23}{6}
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{31}{4} - \frac{23}{6} + \frac{7}{8} \\
 &= \frac{31 \times 6 - 23 \times 4 + 7 \times 3}{24} \\
 &= \frac{186 - 92 + 21}{24} \\
 &= \frac{207 - 92}{24} \\
 &= \frac{115}{24}
 \end{aligned}$$

$$\begin{array}{l}
 2 \mid 4, 6, 8 \\
 2 \mid 2, 3, 4 \\
 1, 3, 2 \\
 \text{Lcm} = 24
 \end{array}$$

$$\text{ii) } 6\frac{1}{8} = 6 + \frac{1}{8} = \frac{6 \times 8 + 1}{8} = \frac{49}{8}$$

$$2\frac{1}{12} = 2 + \frac{1}{12} = \frac{2 \times 12 + 1}{12} = \frac{25}{12}$$

$$5\frac{1}{10} = 5 + \frac{1}{10} = \frac{5 \times 10 + 1}{10} = \frac{51}{10}$$

$$3\frac{7}{25} = 3 + \frac{7}{25} = \frac{3 \times 25 + 7}{25} = \frac{75 + 7}{25} = \frac{82}{25}$$

$$= \frac{49}{8} - \frac{25}{12} - \frac{51}{10} + \frac{82}{25}$$

$$= \frac{49 \times 75 - 25 \times 50 - 51 \times 60 + 82 \times 24}{600}$$

$$= \frac{1333}{600}$$

$$\begin{array}{l} 2 \overline{) 8, 10, 12, 25} \\ 5 \overline{) 4, 5, 6, 25} \\ 2 \overline{) 4, 1, 6, 5} \\ \quad 2, 1, 3, 5 \end{array}$$

$$\text{LCM} = 600$$

3. Jaishree studies daily for $5\frac{2}{3}$ hours

$$i.e. 5 + \frac{2}{3} = \frac{5 \times 3 + 2}{3} = \frac{17}{3} \text{ hours}$$

She devotes her time for science and

$$\text{Mathematics} = 2\frac{4}{5} = 2 + \frac{4}{5} = \frac{2 \times 5 + 4}{5} = \frac{14}{5} \text{ hours}$$

$$\text{Total Time} = \frac{17}{3} \text{ hrs}$$

Let the time for other subject be x

$$\frac{14}{5} + x = \frac{17}{3}$$

$$x = \frac{17}{3} - \frac{14}{5}$$

$$x = \frac{17 \times 5 - 14 \times 3}{15}$$

$$x = \frac{85 - 42}{15}$$

$x = \frac{43}{15}$ hrs for other subjects

4. Ramesh solved $\frac{2}{7}$ part of an exercise

Rashma solved $\frac{4}{5}$ part

Lcm of 7, 5 is 35

$$\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35} ; \quad \frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$$

$$\frac{4}{5} > \frac{2}{7}$$

i.e. Ramesh solved lesser part & by $\frac{28}{35} - \frac{10}{35}$ i.e.

$$\frac{18}{35} \text{ part}$$

5. Sohali had ₹ $35\frac{3}{5}$ i.e. $\frac{35 \times 5 + 3}{5} = ₹ \frac{178}{5}$

She got ₹ $16\frac{1}{15}$ from her mother

$$\text{i.e. } \frac{16 \times 15 + 1}{15} = ₹ \frac{241}{15}$$

She spent on food ₹ $28\frac{2}{3} = \frac{28 \times 3 + 2}{3}$

$$= ₹ \frac{86}{3}$$

Money left = ₹

$$\begin{aligned}
 \text{Total Money She had} &= \text{₹ } \frac{178}{5} + \frac{241}{15} \\
 &= \frac{178 \times 3 + 241 \times 1}{15} \\
 &= \frac{534 + 241}{15} \\
 &= \frac{775}{15}
 \end{aligned}$$

Out of which she spent ₹ on food i.e. $\frac{86}{3}$

$$\begin{aligned}
 \therefore \text{Money left} &= \text{₹ } \frac{775}{15} - \frac{86}{3} \\
 &= \text{₹ } \frac{775 \times 1 - 86 \times 5}{15} \\
 &= \text{₹ } \frac{775 - 430}{15} \\
 &= \frac{345}{15} \\
 &= \text{₹ } 23
 \end{aligned}$$

\(\therefore\) She had left with ₹ 23 with her.

EXERCISE : 2.3

1

$$i) 7 \times \frac{3}{5} = \frac{7 \times 3}{5} = \frac{21}{5}$$

$$ii) \frac{21}{3} \times \frac{3}{14} = \frac{3 \times 3}{2} = \frac{9}{2}$$

$$iii) 3\frac{2}{5} \times 8 = \frac{17}{5} \times 8 = \frac{136}{5}$$

$$iv) 5 \times 6\frac{3}{4} = 5 \times \frac{27}{4} = \frac{135}{4}$$

2

$$i) \frac{2}{3} \times 18^6 = 2 \times 6 = 12$$

$$ii) \frac{1}{2} \times 4\frac{2}{9} = \frac{1}{2} \times \frac{38}{9} = \frac{19}{9}$$

$$iii) \frac{5}{8} \times 9\frac{2}{3} = \frac{5}{8} \times \frac{29}{3} = \frac{145}{24}$$

3.

$$i) \frac{8}{7} \times \frac{5}{9} = \frac{5}{7 \times 3} = \frac{5}{21}$$

$$ii) \frac{2}{5} \times 5\frac{1}{4} = \frac{2}{5} \times \frac{21}{4} = \frac{21}{10}$$

$$iii) 2\frac{1}{3} \times 3\frac{4}{21} = \frac{8}{3} \times \frac{109}{21} = \frac{109}{9}$$

$$iv) 3\frac{1}{6} \times 7\frac{4}{23} = \frac{19}{6} \times \frac{165}{23} = \frac{19 \times 55}{2 \times 23} = \frac{1045}{46}$$

4.

$$i) \frac{1}{3} \times 42 = 14$$

$$ii) \frac{3}{7} \times 5\frac{1}{4} = \frac{3}{7} \times \frac{21}{4} = \frac{3 \times 3}{4} = \frac{9}{4} \text{ Kg}$$

$$iii) 4\frac{1}{2} \times 5\frac{1}{2} = \frac{9}{2} \times \frac{11}{2} = \frac{99}{4} \text{ metres}$$

5

$$i) \frac{3}{7} \times \frac{3}{42} \quad ; \quad \frac{3}{8} \times \frac{8}{8}$$

$$= \frac{3}{7 \times 2}$$

$$; \quad \frac{3 \times 1}{1 \times 8}$$

$$= \frac{3}{14}$$

$$; \quad \frac{3}{8}$$

$$2 \overline{) \begin{array}{r} 8, 14 \\ 4, 7 \end{array}}$$

$$\text{LCM} = 56$$

$$\frac{3}{14} = \frac{3 \times 4}{14 \times 4} = \frac{12}{56} \quad ; \quad \frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$$

$$21 > 12$$

$\therefore \frac{3}{8}$ is greater than $\frac{3}{14}$

ii)

$$\frac{1}{7} \times \frac{3}{7} \quad ; \quad \frac{2}{7} \times \frac{3}{7}$$

$$= \frac{1 \times 3}{7}$$

$$; \quad \frac{2 \times 1}{7}$$

$$= \frac{3}{7}$$

$$; \quad \frac{2}{7}$$

As $\frac{3}{7} > \frac{2}{7}$ ($\because 3 > 2$)

6. Given, 1 metre cloth costs ₹ $31\frac{3}{4} = \frac{31 \times 4 + 3}{4} = ₹\frac{127}{4}$

$5\frac{1}{2}$ metres cloth costs = 9

let it be equal = x.

$$5\frac{1}{2} = \frac{5 \times 2 + 1}{2} = \frac{11}{2}$$

$$\frac{11/2}{1} = \frac{x}{(127/4)}$$

$$\frac{11}{2} = \frac{x \times 4}{127}$$

$$x = \frac{11 \times 127}{2 \times 4}$$

$$x = ₹\frac{127 \times 11}{8} = ₹134\frac{5}{8}$$

∴ $5\frac{1}{2}$ metre cloth costs ₹ $134\frac{5}{8}$.

7 Speed of a car = $105\frac{1}{5}$ kmph
= $\frac{526}{5}$ kmph

Time taken = $3\frac{3}{5}$ hours = $\frac{18}{5}$ hours

Distance = Speed × Time

$$= \frac{526}{5} \times \frac{18}{5} \text{ km}$$

$$\text{Distance} = \frac{9468}{25} \text{ km}$$

8.

For 1 litre of petrol, the car runs 16 km

For $2\frac{3}{4}$ litres of petrol, the car runs x km

Let the car runs be x km

$$\text{i.e. } \frac{x}{16} = \frac{11/4}{1}$$

$$2\frac{3}{4} = \frac{11}{4}$$

$$\frac{x}{16} = \frac{11}{4}$$

$$x = \frac{11 \times 16}{4}$$

$$\boxed{x = 44 \text{ km}}$$

9. In one hour, Sushant reads $\frac{1}{3}$ part of book

Let in $2\frac{1}{5} = \frac{11}{5}$ hours, he reads x part of book

$$\text{i.e. } \frac{x}{(1/3)} = \frac{(11/5)}{(1)}$$

$$3x = \frac{11}{5}$$

$$x = \frac{11}{3 \times 5}$$

$$\boxed{x = \frac{11}{15} \text{ part of book}}$$

10.

Gold and Copper Ornament weighs = 52 grams.

Out of which, part of Copper is $\frac{2}{13}$ th

$$\begin{aligned}\text{Then the Copper weighs} &= \frac{2}{13} \times 52 \\ &= 8 \text{ gms.}\end{aligned}$$

$$\begin{aligned}\text{Remaining Gold weighs} &= 52 - 8 \\ &= 44 \text{ grams}\end{aligned}$$

11.

Total no. of Students in a class = 40.

i) Out of them, Students like to study English = $\frac{1}{5}$ th of Total

$$\begin{aligned}&= \frac{1}{5} \times 40 \\ &= 8\end{aligned}$$

ii) Students like to study Mathematics = $\frac{2}{5}$ th of Total

$$\begin{aligned}&= \frac{2}{5} \times 40 \\ &= 16.\end{aligned}$$

iii) Fraction of Total no. of Students like to study

$$\begin{aligned}\text{Science} &= 1 - \left\{ \frac{1}{5} + \frac{2}{5} \right\} \\ &= 1 - \left\{ \frac{1+2}{5} \right\}\end{aligned}$$

$$= 1 - \frac{3}{5}$$

$$= \frac{5-3}{5}$$

$$= \frac{2}{5}$$

Fraction of Students who like to study Science = $\frac{2}{5}$ of Total

12

A rectangular sheet is having length = $12\frac{1}{2}$ cm = $\frac{25}{2}$ cm = L

$$\text{width} = B = 10\frac{2}{3} \text{ cm} = \frac{32}{3} \text{ cm}$$

i) We know perimeter of rectangle = $2 \times (\text{length} + \text{width})$

$$= 2 \times \left(\frac{25}{2} + \frac{32}{3} \right)$$

$$= 2 \times \left(\frac{25 \times 3 + 32 \times 2}{6} \right)$$

$$= 2 \times \left(\frac{75 + 64}{6} \right)$$

$$= 2 \times \left(\frac{139}{6} \right)$$

$$\therefore \text{perimeter of Rectangle} = \frac{139}{3} \text{ cm}$$

ii) Area of rectangle = length \times width

$$= \frac{25}{2} \times \frac{32}{3}$$

$$= \frac{25 \times 16}{2 \times 1}$$

$$= \frac{400}{3}$$

$$= 133\frac{1}{3} \text{ cm}^2$$

$$\begin{array}{r} 3 \overline{)400} \quad (133 \\ \underline{3} \\ 10 \\ \underline{9} \\ 10 \\ \underline{9} \\ 1 \end{array}$$

\therefore Area of rectangle = $133\frac{1}{3} \text{ cm}^2$.

13.

Part of students are girls = $\frac{25}{54}$.

Then part of students are boys = $1 - \frac{25}{54}$
 $= \frac{54 - 25}{54}$
 $= \frac{29}{54}$.

Given number of boys is 2030.

Let Total no. of students = x

Now, $\frac{29}{54} \times x = 2030$.

$$x = \frac{2030 \times 54}{29}$$

$$x = 3780$$

\therefore Total no. of students = 3780.

No. of girls = Total - No. of boys
 $= 3780 - 2030 = 1750$.

14. Let the number of Trees in an orchard = "x"

Given Banana Trees are 148 in number.

Also Orange Trees are $\frac{1}{5}$ th Total

Mango Trees are $\frac{3}{13}$ th Total.

Now, The part of banana Trees = $1 - \left\{ \frac{1}{5} + \frac{3}{13} \right\}$

$$= 1 - \frac{13 + 3 \times 5}{65}$$

$$= 1 - \frac{13 + 15}{65}$$

$$= 1 - \frac{28}{65}$$

$$= \frac{65 - 28}{65}$$

$$= \frac{37}{65}$$

Now, as banana Trees = 148

$$\frac{37}{65} \text{th of Total} = 148$$

$$\text{i.e. } \frac{37}{65} \times x = 148$$

$$x = \frac{148 \times 65}{37} = 260$$

\therefore Total no. of Trees in an orchard = 260.

EXERCISE 12.4.

1

i) Reciprocal of $\frac{3}{7} = \frac{1}{(\frac{3}{7})} = \frac{7}{3}$.

ii) Reciprocal of $\frac{13}{9} = \frac{1}{(\frac{13}{9})} = \frac{9}{13}$.

iii) Reciprocal of $8 = \frac{1}{8}$.

2

i) $14 \div \frac{5}{6} = \frac{14}{(\frac{5}{6})}$
 $= \frac{14 \times 6}{5}$
 $= \frac{84}{5} = 16 \frac{4}{5}$

$$\begin{array}{r} 5 \overline{) 84} \quad (16) \\ \underline{5} \\ 34 \\ \underline{30} \\ 4 \end{array}$$

ii) $5 \div 3\frac{4}{7} = 5 \div \frac{25}{7}$
 $= \frac{5}{(\frac{25}{7})}$
 $= \frac{5 \times 7}{25}$
 $= \frac{7}{5}$

iii) $3\frac{1}{5} \div 1\frac{2}{3} = \frac{16}{5} \div \frac{5}{3}$

$$\begin{aligned}
 &= \frac{16/5}{5/3} \\
 &= \frac{16}{5} \times \frac{3}{5} \\
 &= \frac{48}{25} = 1 \frac{23}{25}
 \end{aligned}$$

$$\begin{array}{r}
 25 \overline{)48} \quad (1 \\
 \underline{25} \\
 23
 \end{array}$$

Mixed fraction
 = Quotient $\frac{\text{Remainder}}{\text{Divisor}}$

$$\text{iv) } 2\frac{5}{8} \div 1\frac{1}{6} = \frac{21}{8} \div \frac{7}{6}$$

$$= \frac{21/8}{7/6}$$

$$= \frac{21^3}{8^4} \times \frac{6^3}{7}$$

$$= \frac{9}{4} = 2\frac{1}{4}$$

$$\begin{array}{r}
 4 \overline{)9} \quad (2 \\
 \underline{8} \\
 1
 \end{array}$$

3.

$$\begin{aligned}
 \text{Total length of cloth} &= 77\frac{1}{2} \text{ metres} \\
 &= \frac{155}{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{Each piece of cloth length required} &= 5\frac{1}{6} \\
 &= \frac{31}{6}
 \end{aligned}$$

$$\begin{aligned}
 \text{Now Total no. of pieces of cloth} &= \frac{155/2}{31/6} \\
 &= \frac{155}{2} \times \frac{6}{31} \\
 &= 15 \text{ pieces}
 \end{aligned}$$

4.

Let the number multiplied to $4\frac{7}{8}$ be x

$$4\frac{7}{8} = 4 + \frac{7}{8} = \frac{4 \times 8 + 7}{8} = \frac{32 + 7}{8} = \frac{39}{8}$$

$$\text{Required answer} = 87\frac{3}{4}$$

$$\text{i.e. } \frac{39}{8} \times x = 87\frac{3}{4}$$

$$\frac{39x}{8} = \frac{87 \times 4 + 3}{4}$$

$$\frac{39x}{8} = \frac{351}{4}$$

$$x = \frac{351 \times 8}{4 \times 39}$$

$$x = 9 \times 2$$

$$\boxed{x = 18}$$

\therefore Number Multiplied = 18

5.

Part of Milk each student gets = $\frac{1}{3}$ th of Total

$$\text{Total Consumption of Milk} = 57\frac{2}{3} \text{ litres}$$

$$= \frac{57 \times 3 + 2}{3}$$

$$= \frac{173}{3}$$

Let the number of students in hostel be 'x'

$$\frac{1}{3} \text{th of Total} = 57\frac{2}{3}$$

$$\frac{1}{3} \times x = \frac{173}{3}$$

$$x = \frac{173 \times 3}{3 \times 1}$$

$$x = 173$$

\therefore Total number of students in hostel = 173.

6.

Given Cost of $5\frac{1}{4}$ kg apples = ₹ 336.

Let Cost of 1 kg apples = ₹ x

$$5\frac{1}{4} = 5 + \frac{1}{4} = \frac{5 \times 4 + 1}{4} = \frac{21}{4}$$

$$\frac{x}{336} = \frac{1}{(21/4)}$$

$$\frac{x}{336} = \frac{4}{21}$$

$$x = \frac{4 \times 336}{21}$$

$$x = 64$$

\therefore Cost of apples = ₹ 64 per kg

$$\begin{aligned}
 7 \quad \text{Given Area of rectangular plot} &= 68\frac{3}{4} \text{ sq.m} \\
 &= \frac{68 \times 4 + 3}{4} \\
 &= \frac{275}{4} \text{ sq.m}
 \end{aligned}$$

$$\begin{aligned}
 \text{Also Length of Rectangular plot} &= 12\frac{1}{2} \text{ m} \\
 &= \frac{12 \times 2 + 1}{2} \\
 &= \frac{25}{2} \text{ m}
 \end{aligned}$$

We know Area of rectangle $A = \text{Length} \times \text{width}$

$$\text{width} \times \frac{25}{2} = \frac{275}{4}$$

$$\text{width} = \frac{275 \times 2}{25 \times 4}$$

$$= \frac{11}{2}$$

$$\therefore \text{width} = 5\frac{1}{2} \text{ m}$$

8.

$$\begin{aligned}
 \text{Given Cost of } 5\frac{1}{2} = \frac{11}{2} \text{ kg of sugar} &= \text{₹ } 206\frac{1}{4} \\
 &= \frac{206 \times 4 + 1}{4} \\
 &= \text{₹ } \frac{825}{4}
 \end{aligned}$$

$$\text{Let Cost of } 8\frac{1}{4} = \frac{33}{4} \text{ kg of sugar be 'x'}$$

$$\frac{x}{\left(\frac{825}{4}\right)} = \frac{33/4}{11/2}$$

$$\frac{4x}{825} = \frac{33}{4} \times \frac{2}{11}$$

$$x = \frac{33}{4} \times \frac{2}{11} \times \frac{825}{4}$$

$$\begin{array}{r} 8 \overline{) 2475} \quad (309 \\ \underline{240} \\ 75 \\ \underline{72} \\ 3 \end{array}$$

$$x = \frac{3 \times 825}{2 \times 4}$$

$$x = 2 \frac{2475}{8} = 2 \frac{309 \frac{3}{8}}$$

\therefore Cost of $8\frac{1}{4}$ kg Sugar = $2 \frac{309 \frac{3}{8}}$

9.

In 2 hours, Renu completed $\frac{2}{3}$ part of work.

Let In $1\frac{1}{4}$ hours, Renu completes 'x' part of work

$$1\frac{1}{4} \quad 1 + \frac{1}{4} = \frac{1 \times 4 + 1}{4} = \frac{5}{4}$$

$$\text{i.e. } \frac{x}{\left(\frac{2}{3}\right)} = \frac{5/4}{2}$$

$$x = \frac{5}{4 \times 2} \times \frac{2}{3}$$

$$\boxed{x = \frac{5}{12}}$$

EXERCISE : 2.5

1

$$i) 20.03 = 2 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$$

$$ii) 200.03 = 2 \times 100 + 0 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$$

$$iii) 2.034 = 2 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100} + 4 \times \frac{1}{1000}$$

2

$$i) \text{ place value of digit 2 in } 2.56 \text{ is } 2 \times 1 = 2$$

$$ii) \text{ place value of digit 2 in } 21.39 \text{ is } 2 \times 10 = 20$$

$$iii) \text{ place value of digit 2 in } 10.25 \text{ is } 2 \times \frac{1}{10} = \frac{2}{10}$$

$$iv) \text{ place value of digit 2 in } 63.352 \text{ is } 2 \times \frac{1}{1000} = \frac{2}{1000}$$

3.

$$i) 0.8 = \frac{8}{10} = \frac{4}{5}$$

$$ii) 0.225 = \frac{225}{1000} = \frac{9}{40}$$

$$iii) 0.0092 = \frac{92}{10000} = \frac{23}{2500}$$

$$iv) 3.025 = \frac{3025}{1000} = \frac{121}{40}$$

4.

$$i) 5.05 = \frac{505}{100} = 5 + \frac{5}{100} = 5 + \frac{1}{20} = 5\frac{1}{20}$$

$$ii) 63.125 = 63 + \frac{125}{1000} = 63 + \frac{1}{8} = 63\frac{1}{8}$$

$$iii) 17.075 = 17 + \frac{75}{1000} = 17 + \frac{3}{40} = 17\frac{3}{40}$$

$$iv) 317.0006 = 317 + \frac{6}{10000} = 317 + \frac{3}{5000} = 317\frac{3}{5000}$$

5.

$$i) \frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10} = 0.6$$

$$ii) \frac{7}{8} = \frac{7 \times 125}{8 \times 125} = \frac{875}{1000} = 0.875$$

$$iii) 3\frac{5}{16} = \frac{3 \times 16 + 5}{16} = \frac{53}{16} = \frac{53 \times 625}{16 \times 10000} = \frac{33125}{10000} = 3.3125$$

$$iv) 137\frac{13}{625} = 137 + \frac{13}{625} = 137 + \frac{13 \times 16}{625 \times 16} = 137 + \frac{208}{10000} \\ = 137 + 0.0208 \\ = 137.0208$$

6.

i) 0.5 or 0.05 are like decimal numbers.

We know that whole number parts of given numbers are ~~not~~ equal.

Let us their, digits at tenth place.

In both numbers, digits at tenth place in 0.5 is 5 and digits at tenth place in 0.05 is 0.

Since $5 > 0$, So $0.5 > 0.05$.

ii) Given numbers are 7, 0.7

Whole numbers parts of given numbers are not equal

In number 7, the whole number is 7

In number 0.7, the whole number is 0.

Since $7 > 0$, So $7 > 0.7$.

iii) Given numbers are 2.03 or 2.30.

We note that whole number parts of given numbers are equal.

Let us compare their tenth digits

In 2.03, digit at tenth place is 0

In 2.30, digit at tenth place is 3.

Since $3 > 0$, So $2.30 > 2.03$.

iv) Given numbers are 0.80 or 0.88.

We know that whole number parts of given numbers are equal.

Let us compare their tenth digits

In both numbers, digits at tenth place = 8

So, we compare their hundredth place

In 0.80, digit at hundredth place = 0

In 0.88, digit at hundredth place = 8

Since $8 > 0$, so $0.88 > 0.80$.

7 i) Compare whole numbers.

$83 > 38 > 3$ (or) $3 < 38 < 83$.

Compare tenth digits numbers in 38.02, 38.021, 38.002

In 38.02, the tenth digit is 0

In 38.021, 38.002, the tenth digit is 0

Compare hundredth digits

In 38.02, 38.021, the hundredth digit is 2

But in 38.002, the hundredth digit is 0

Since $0 < 2$, $38.002 < (38.02, 38.021)$

Compare thousandths place in 38.020, 38.021

In 38.020, the thousandth place is 0

In 38.021, the thousandth place is 1

Since $0 < 1$, so $38.020 < 38.021$

\therefore So the ascending order is $3.802 < 38.002 < 38.020 < 38.021 < 83.02$

ii) In all the given numbers except 64.542, all are having 46 as their whole number.

So 64.542 is the highest (or) largest number.

Comparing tenth digits

In 46.542, the tenth digit is 5.

In 46.452, the tenth digit is 4.

In 46.254, the tenth digit is 2.

Since $2 < 4 < 5$, so $46.254 < 46.452 < 46.542$.

Compare hundredth and thousandth place in 46.05, 46.0542

In both numbers hundredth and tenth digits are same 5, 0.

In 46.050, the hundredth and thousandth digit is 0.

In 46.0542, the thousandth digit is 4.

Since $0 < 4$, so $46.050 < 46.0542$.

∴ Ascending order is $46.050 < 46.0542 < 46.254 < 46.452 < 46.542 < 64.542$.

8

(i) We know that $5 > 1 > 0$ (whole numbers)

Now In 1.87, 1.9, 1.78

The tenth digits are 8, 9, 7

Since $9 > 8 > 7$, so $1.9 > 1.87 > 1.78$.

Now In 0.93, 0.39

The tenth digits are 9, 3

Since $9 > 3$, so $0.93 > 0.39$

\therefore Descending order is $5.6 > 1.9 > 1.87 > 1.78 > 0.93 > 0.39$

ii) We know that $71 > 20 > 3 > 2 > 0$ in whole number

Compare Tenth digits in 2.01, 2.14

In 2.01, the tenth digit is 0

In 2.14, the tenth digit is 1

Since $1 > 0$, so $2.14 > 2.01$

\therefore Descending order is $71.201 > 20.1 > 3.1 > 2.14 > 2.01 >$

0.52

9

(i) 1 Rupee = 100 paise

$$\text{So 1 paise} = \frac{1}{100} \text{ rupee}$$

$$7 \text{ paise} = 7 \times \frac{1}{100} \text{ rupee} = \frac{7}{100} \text{ rupee}$$

$$= 0.07 \text{ rupee}$$

ii) 77 rupees 77 paise

$$= \left[77 + 77 \times \frac{1}{100} \right] \text{ rupee}$$

$$= \left[77 + \frac{77}{100} \right] \text{ rupee}$$

$$= [77 + 0.77] \text{ rupee}$$

$$= 77.77 \text{ rupee}$$

iii) 235 paise = $235 \times \frac{1}{100}$ rupee = 2.35 rupee

10.

We know $1 \text{ m} = 100 \text{ cm} \Rightarrow 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$1 \text{ km} = 1000 \text{ m} \Rightarrow 1 \text{ m} = \frac{1}{1000} \text{ km}$$

$$5 \text{ cm} = 5 \times \frac{1}{100} \text{ m} = 0.05 \text{ m}$$

$$0.05 \text{ m} = \frac{5}{100} \text{ m} = \frac{5}{100} \times \frac{1}{1000} \text{ km} = 0.00005 \text{ km}$$

11. We know $1\text{kg} = 1000\text{g}$

$$\text{So } 1\text{g} = \frac{1}{1000}\text{kg}$$

$$\text{i) } 200\text{g} = 200 \times \frac{1}{1000}\text{kg} = \frac{2}{10}\text{kg} = 0.2\text{kg}$$

$$\text{ii) } 3470\text{g} = 3470 \times \frac{1}{1000}\text{kg} = \frac{347}{100}\text{kg} = 3.47\text{kg}$$

$$\text{iii) } 4\text{kg } 8\text{g} = \left(4 + \frac{8}{1000}\right)\text{kg} = (4 + 0.008)\text{kg} = 4.008\text{kg}$$

12. i) Sum = $5.765 + 9.2 + 3.08$

$$\begin{array}{r} 00 \\ 5.765 \\ + 9.200 \\ + 3.080 \\ \hline 18.045 \end{array}$$

ii)

$$\begin{array}{r} 0000 \\ 15.4900 \\ + 8.3572 \\ + 0.9030 \\ + 7.8000 \\ \hline 32.5502 \end{array}$$

13.

$$\begin{array}{r} \text{i) } 72.530 \\ - 46.782 \\ \hline 25.748 \end{array}$$

ii) Group the positive and negative numbers separately

Positive numbers

18.376

Negative numbers

$$\begin{array}{r} 00 \\ 5.4300 \\ + 8.8976 \\ \hline 14.3276 \end{array}$$

$$\begin{array}{r} 18.3760 \\ - 14.3276 \\ \hline \text{Ans} = 4.0484 \end{array}$$

iii) positive number

28.5

Negative numbers

$$\begin{array}{r} 9.708 \\ + 6.234 \\ \hline 15.942 \end{array}$$

$$\begin{array}{r} 28.500 \\ - 15.942 \\ \hline \text{Ans} = 12.558 \end{array}$$

iv) positive numbers

$$\begin{array}{r} 8.20 \\ 2.67 \\ \hline 10.87 \end{array}$$

Negative Numbers:

$$\begin{array}{r} 00 \\ 4.5600 \\ + 0.7912 \\ \hline 5.3512 \end{array}$$

$$\begin{array}{r} 10.8700 \\ - 5.3512 \\ \hline \text{Ans} = 5.5188 \end{array}$$

14

i) Let the number added = x

$$x + 3.56 = 13.016$$

$$x = 13.016 - 3.56$$

$$\begin{array}{r} 13.016 \\ - 3.560 \\ \hline 9.456 \end{array}$$

$$\boxed{x = 9.456}$$

ii) Let the number subtracted be x

$$30 - x = 23.709$$

$$x = 30 - 23.709$$

$$\begin{array}{r} 30.000 \\ - 23.709 \\ \hline 6.291 \end{array}$$

$$\boxed{x = 6.291}$$

iii) Excess of 20.4 over 9.7403 is

$$= 20.4 - 9.7403$$

$$\begin{array}{r} 20.4000 \\ - 9.7403 \\ \hline 10.6597 \end{array}$$

EXERCISE : 2.6.

$$\begin{aligned} \text{i) } 2.7 \times 4 &= \frac{27}{10} \times 4 \\ &= \frac{108}{10} = 10.8. \end{aligned}$$

$$\begin{array}{r} 27 \\ \times 4 \\ \hline 108 \end{array}$$

$$\begin{aligned} \text{ii) } 2.71 \times 5 &= \frac{271}{100} \times 5 \\ &= \frac{1355}{100} = 13.55. \end{aligned}$$

$$\begin{array}{r} 271 \\ \times 5 \\ \hline 1355 \end{array}$$

$$\begin{aligned} \text{iii) } 2.5 \times 0.3 &= \frac{25}{10} \times \frac{3}{10} \\ &= \frac{75}{100} = 0.75 \end{aligned}$$

$$\begin{aligned} \text{iv) } 2.3 \times 4.35 &= \frac{23}{10} \times \frac{435}{100} \\ &= \frac{10005}{1000} = 10.005. \end{aligned}$$

$$\begin{array}{r} 435 \\ \times 23 \\ \hline 1305 \\ 870 \times \\ \hline 10005 \end{array}$$

$$\text{v) } 238.06 \times 7.5 = \frac{23806}{100} \times \frac{75}{10} = \frac{1785450}{1000} = 1785.45.$$

$$\text{vi) } 0.79 \times 32.4 = \frac{79}{100} \times \frac{324}{10} = \frac{25596}{1000} = 25.596.$$

$$\text{vii) } 1.07 \times 0.02 = \frac{107}{100} \times \frac{2}{100} = \frac{214}{10000} = 0.0214.$$

$$\text{viii) } 10.05 \times 1.05 = \frac{1005}{100} \times \frac{105}{100} = \frac{105525}{10000} = 10.5525.$$

2

i)

$$\begin{array}{r} 2.7 \\ 4 \overline{) 10.8} \\ \underline{8} \\ 2.8 \\ \underline{2.8} \\ 0 \end{array} = 2.7$$

ii) $126.35 \div 7$

$$\begin{array}{r} 18.05 \\ 7 \overline{) 126.35} \\ \underline{7} \\ 563 \\ \underline{560} \\ 35 \\ \underline{35} \\ 0 \end{array} \quad \text{Ans} = 18.05$$

iii) $22.5 \div 1.5 = \frac{22.5}{1.5} \times \frac{10}{10} = \frac{225}{15}$

$$\begin{array}{r} 15 \\ 15 \overline{) 225} \\ \underline{15} \\ 75 \\ \underline{75} \\ 0 \end{array}$$

Hence, $22.5 \div 1.5 = 15$.

iv) $4.28 \div 0.02 = \frac{4.28}{0.02} \times \frac{100}{100} = \frac{428}{2}$

$$\begin{array}{r} 214 \\ 2 \overline{) 428} \\ \underline{4} \\ 2 \\ \underline{2} \\ 8 \\ \underline{8} \\ 0 \end{array}$$

Hence, $4.28 \div 0.02 = 214$.

$$V) 3.645 \div 1.35 = \frac{3.645}{1.35} \times \frac{1000}{1000} = \frac{3645}{1350}$$

$$\begin{array}{r} 2.7 \\ 1350 \overline{) 3645} \\ \underline{2700} \\ 9450 \\ \underline{9450} \\ 0 \end{array}$$

Hence, $3.645 \div 1.35 = 2.7$

$$VI) 0.728 \div 0.04 = \frac{0.728}{0.040} \times \frac{1000}{1000} = \frac{728}{40}$$

$$= \frac{182}{10}$$

$$= 18.2$$

$$VII) 13.06 \div 0.08 = \frac{13.06}{0.08} \times \frac{100}{100} = \frac{1306}{8}$$

$$\begin{array}{r} 163.25 \\ 8 \overline{) 1306} \\ \underline{8} \\ 50 \\ \underline{48} \\ 26 \\ \underline{24} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Hence, $13.06 \div 0.08 = 163.25$

$$\text{viii) } 58.635 \div 4.5 = \frac{58.635}{4.500} \times \frac{1000}{1000} = \frac{58635}{4500}$$

$$\begin{array}{r} 13.03 \\ 4500 \overline{) 58635} \\ \underline{4500} \\ 13635 \\ \underline{13500} \\ 13500 \\ \underline{13500} \\ 0 \end{array}$$

Hence, $58.635 \div 4.5 = 13.03$.

3.

i) $5.9 \times 10 = 59$ To multiply by 10, shift decimal point to the right by one place
 $5.9 \times 100 = 590$
 $5.9 \times 1000 = 5900$

ii) $3.76 \times 10 = 37.6$
 $3.76 \times 100 = 376$
 $3.76 \times 1000 = 3760$

iii) $0.549 \times 10 = 5.49$
 $0.549 \times 100 = 54.9$
 $0.549 \times 1000 = 549$

4. To divide a decimal number by 10, 100, 1000, shift decimal point to the left by one, two, three places.

i) $4.8 \div 10 = 0.48$ $4.8 \div 1000 = 0.0048$
 $4.8 \div 100 = 0.048$

$$\begin{aligned} \text{ii) } 38.53 \div 10 &= 3.853 \\ 38.53 \div 100 &= 0.3853 \\ 38.53 \div 1000 &= 0.03853 \end{aligned}$$

$$\begin{aligned} \text{iii) } 128.9 \div 10 &= 12.89 \\ 128.9 \div 100 &= 1.289 \\ 128.9 \div 1000 &= 0.1289 \end{aligned}$$

5. Given Length = 5.7 cm ; Breadth = 3.5 cm

$$\text{Area of Rectangle A} = \text{Length} \times \text{Breadth}$$

$$= 5.7 \times 3.5$$

$$= \frac{57}{10} \times \frac{35}{10}$$

$$= \frac{1995}{100}$$

$$= 19.95 \text{ cm}^2$$

6. Given, Cost of one metre cloth is ₹ 38.50

$$\text{Cost of 3.6 metre cloth is } 3.6 \times 38.5$$

$$= \frac{36}{10} \times \frac{385}{10}$$

$$= \frac{13860}{100}$$

$$= ₹ 138.60$$

7. One litre of petrol covers distance = 45.3 km

5.9 litres of petrol covers distance = 5.9×45.3 km

$$= \frac{59}{10} \times \frac{453}{10} \text{ km}$$

$$= \frac{26727}{100} \text{ km}$$

$$= 267.27 \text{ km}$$

8. 1 kg of pure milk contains = 0.245 kg fat

12.8 kg of milk contains = 12.8×0.245

$$= \frac{128}{10} \times \frac{245}{1000}$$

$$= \frac{31360}{10000}$$

$$= 3.136 \text{ kg}$$

9.

6 children shared equally

Total rupees with them are ₹ 242.46.

Then each child shared = ₹ $\frac{242.46}{6}$

$$= \left(\frac{24246}{100} \right) \div 6$$

$$= ₹ \frac{24246}{100 \times 6}$$

$$= ₹ \frac{4041}{100}$$

$$= ₹ 40.41$$

$$\begin{array}{r} 4041 \\ 6 \overline{) 24246} \\ \underline{240} \\ 24 \\ \underline{24} \\ 6 \\ \underline{6} \\ 0 \end{array}$$

∴ Each childred shared ₹ 40.41.

10.

2.4 litres of petrol covers a distance = 43.2 km.

one litre of petrol covers a distance = $\frac{43.2}{2.4}$ km

$$= \frac{432/10}{24/10}$$

$$= \frac{432 \times 10}{10 \times 24}$$

$$= \frac{432}{24}$$

$$= 18 \text{ km}$$

$$\begin{array}{r} 18 \\ 24 \overline{) 432} \\ \underline{24} \\ 192 \\ \underline{192} \\ 0 \end{array}$$

11.

Total 8.4 litres of ice cream.

one cone can be filled with 35 millilitres of ice cream.

Number of ice cream cones can be filled

$$= \frac{8.4 \times 1000 \text{ ml}}{35 \text{ ml}} \quad (\text{As } 1 \text{ litre} = 1000 \text{ ml})$$

$$= \frac{8400}{35}$$

$$\begin{array}{r}
 240 \\
 35 \overline{) 8400} \\
 \underline{70} \\
 1400 \\
 \underline{1400} \\
 0
 \end{array}$$

Number of ice Cream Cones = 240.

12.

Product of two decimal numbers = 38.745

one of the number is 2.7

Let the other number be x

i.e. $x \times 2.7 = 38.745$

$$x = \frac{38.745}{2.7}$$

$$x = \frac{38745/1000}{27/10}$$

$$x = \frac{38745}{1000} \times \frac{10}{27}$$

$$\begin{array}{r}
 1435 \\
 27 \overline{) 38745} \\
 \underline{27} \\
 117 \\
 \underline{108} \\
 94 \\
 \underline{81} \\
 135 \\
 \underline{135} \\
 0
 \end{array}$$

$$x = \frac{1435}{100}$$

$$x = 14.35$$

The other number is 14.35.

13.

Let the number be "x"

Given $\frac{2}{3}$ of a number is 10

$$\text{i.e. } \frac{2}{3} \times x = 10$$

$$x = \frac{10 \times 3}{2}$$

$$x = 15$$

The number $x = 15$

\therefore Now 1.75 times of number = 1.75×15

$$= \frac{175}{100} \times 15$$

$$= \frac{2625}{100}$$

$$= 26.25$$

EXERCISE: 2.7

i) $1\frac{1}{9} = 1 + \frac{1}{9} = \frac{9+1}{9} = \frac{10}{9}$

$$3\frac{1}{2} = 3 + \frac{1}{2} = \frac{6+1}{2} = \frac{7}{2}$$

$$\frac{3}{5} \div 1\frac{1}{9} = \frac{3}{5} \times \frac{9}{10} = \frac{27}{50}$$

$$\text{So } \frac{2}{3} + \frac{7}{2} = \frac{2 \times 2 + 7 \times 3}{6} = \frac{4+21}{6} = \frac{25}{6} = 4\frac{1}{6}$$

ii) $2\frac{3}{8} = 2 + \frac{3}{8} = \frac{16+3}{8} = \frac{19}{8}$

$$\frac{4}{5} \times 2\frac{3}{8} = \frac{4}{5} \times \frac{19}{8} = \frac{19}{10}$$

$$2 \times \frac{3}{5} = \frac{6}{5} \times \frac{2}{2} = \frac{12}{10}$$

$$\text{So, } \frac{19}{10} - \frac{12}{10} = \frac{19-12}{10} = \frac{7}{10}$$

iii) $\frac{4}{5} + 2 = \frac{4+2 \times 5}{5} = \frac{4+10}{5} = \frac{14}{5}$

$$3 - \frac{2}{3} = \frac{3 \times 3 - 2}{3} = \frac{9-2}{3} = \frac{7}{3}$$

$$\text{So, } \frac{14}{5} \times \frac{7}{3} = \frac{98}{15} = 6\frac{8}{15}$$

$$15 \overline{) 98} \begin{array}{r} 6 \\ \underline{90} \\ 8 \end{array}$$

2

$$i) 2\frac{2}{7} = 2 + \frac{2}{7} = \frac{2 \times 7 + 2}{7} = \frac{16}{7}$$

$$\frac{1}{4} \text{ of } 2\frac{2}{7} = \frac{1}{4} \times \frac{16}{7} = \frac{4}{7}$$

$$\text{So, } \frac{4}{7} \div \frac{3}{5} = \frac{4/7}{3/5} \\ = \frac{4}{7} \times \frac{5}{3} = \frac{20}{21}$$

$$ii) \frac{3}{7} \div \frac{1}{2} = \frac{3/7}{1/2} = \frac{3}{7} \times 2 = \frac{6}{7}$$

$$\text{So } \frac{6}{7} \div \frac{7}{8} = \frac{6/7}{7/8} = \frac{6}{7} \times \frac{8}{7} = \frac{48}{49}$$

$$iii) \frac{5}{8} \div \frac{3}{4} = \frac{5/8}{3/4} = \frac{5}{8} \times \frac{4}{3} = \frac{5}{6}$$

$$\text{So, } \frac{5}{6} + \frac{2}{5} = \frac{5 \times 5 + 2 \times 6}{30} = \frac{25 + 12}{30} = \frac{37}{30} = 1\frac{7}{30}$$

3

$$i) 4\frac{1}{2} = 4 + \frac{1}{2} = \frac{4 \times 2 + 1}{2} = \frac{9}{2}$$

$$2\frac{2}{3} = 2 + \frac{2}{3} = \frac{2 \times 3 + 2}{3} = \frac{8}{3}$$

$$5\frac{1}{2} = 5 + \frac{1}{2} = \frac{5 \times 2 + 1}{2} = \frac{11}{2}$$

$$3\frac{5}{6} = 3 + \frac{5}{6} = \frac{3 \times 6 + 5}{6} = \frac{18 + 5}{6} = \frac{23}{6}$$

$$\left(4\frac{1}{2} - 2\frac{2}{3}\right) = \frac{9}{2} - \frac{8}{3} = \frac{9 \times 3 - 8 \times 2}{6} = \frac{27 - 16}{6} = \frac{11}{6}$$

$$5\frac{1}{2} \text{ of } 3\frac{5}{6} = \frac{11}{2} \times \frac{23}{6} = \frac{253}{12}$$

$$\text{So, here fore } \frac{11}{6} \div \frac{7}{12} + \frac{253}{12}$$

$$= \frac{11}{6} \times \frac{12^2}{7} + \frac{253}{12}$$

$$= \frac{22}{7} + \frac{253}{12}$$

$$= \frac{22 \times 12 + 253 \times 7}{84}$$

$$= \frac{2035}{84}$$

$$= 24\frac{19}{84}$$

$$\text{ii) } 5\frac{1}{3} = 5 + \frac{1}{3} = \frac{5 \times 3 + 1}{3} = \frac{16}{3}$$

$$2\frac{1}{2} = 2 + \frac{1}{2} = \frac{2 \times 2 + 1}{2} = \frac{5}{2}$$

$$\left(\frac{1}{2} + \frac{1}{3}\right) \div \left(\frac{1}{4} - \frac{1}{6}\right) - \left[8 - \left\{5\frac{1}{3} - \left(3 - 2\frac{1}{2}\right)\right\}\right]$$

$$= \left(\frac{3+2}{6}\right) \div \left(\frac{3-2}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(3 - \frac{5}{2}\right)\right\}\right]$$

$$= \left(\frac{5}{6}\right) \div \left(\frac{1}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(\frac{6-5}{2}\right)\right\}\right]$$

$$\left(4\frac{1}{2} - 2\frac{2}{3}\right) = \frac{9}{2} - \frac{8}{3} = \frac{9 \times 3 - 8 \times 2}{6} = \frac{27 - 16}{6} = \frac{11}{6}$$

$$5\frac{1}{2} \text{ of } 3\frac{5}{6} = \frac{11}{2} \times \frac{23}{6} = \frac{253}{12}$$

$$\text{So, therefore } \frac{11}{6} \div \frac{7}{12} + \frac{253}{12}$$

$$= \frac{11}{6} \times \frac{12^2}{7} + \frac{253}{12}$$

$$= \frac{22}{7} + \frac{253}{12}$$

$$= \frac{22 \times 12 + 253 \times 7}{84}$$

$$= \frac{2075}{84}$$

$$= 24\frac{19}{84}$$

$$\text{ii) } 5\frac{1}{3} = 5 + \frac{1}{3} = \frac{5 \times 3 + 1}{3} = \frac{16}{3}$$

$$2\frac{1}{2} = 2 + \frac{1}{2} = \frac{2 \times 2 + 1}{2} = \frac{5}{2}$$

$$\left(\frac{1}{2} + \frac{1}{3}\right) \div \left(\frac{1}{4} - \frac{1}{6}\right) - \left[8 - \left\{5\frac{1}{3} - \left(3 - 2\frac{1}{2}\right)\right\}\right]$$

$$= \left(\frac{3+2}{6}\right) \div \left(\frac{3-2}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(3 - \frac{5}{2}\right)\right\}\right]$$

$$= \left(\frac{5}{6}\right) \div \left(\frac{1}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(\frac{6-5}{2}\right)\right\}\right]$$

$$\begin{aligned}
&= \frac{5/6}{1/12} - \left[8 - \left(\frac{16}{3} - \frac{1}{2} \right) \right] \\
&= \frac{5}{6} \times 12 - \left[8 - \left(\frac{16 \times 2 - 3 \times 1}{6} \right) \right] \\
&= 10 - \left[8 - \left(\frac{32-3}{6} \right) \right] \\
&= 10 - \left[8 - \frac{29}{6} \right] \\
&= 10 - \left[\frac{8 \times 6 - 29}{6} \right] \\
&= 10 - \frac{48-29}{6} \\
&= 10 - \frac{19}{6} \\
&= \frac{60-19}{6} \\
&= \frac{41}{6} = 6\frac{5}{6}
\end{aligned}$$

4

$$\begin{aligned}
\text{(i)} \quad & 2.3 - \left[1.89 - \left\{ 3.6 - (2.7 - 0.8 - 0.03) \right\} \right] \\
&= 2.3 - \left[1.89 - \left\{ 3.6 - (2.7 - 0.77) \right\} \right] \\
&= 2.3 - \left[1.89 - \left\{ 3.6 - 1.93 \right\} \right] \\
&= 2.3 - \left[1.89 - 1.67 \right] \\
&= 2.3 - 0.22 \\
&= 2.08
\end{aligned}$$

$$\begin{array}{r}
0.80 \\
- 0.03 \\
\hline
0.77 \\
2.70 \\
- 0.77 \\
\hline
1.93 \\
3.60 \\
- 1.93 \\
\hline
1.67
\end{array}$$

$$\begin{array}{r}
1.89 \\
- 1.67 \\
\hline
0.22
\end{array}$$

$$\text{ii) } 4.5 - \frac{1}{2} \text{ of } (7.6 - 3.5) + 2.3 \times 4.05$$

$$= 4.5 - \frac{1}{2} \times (4.1) + 2.3 \times 4.05$$

$$= 4.5 - \frac{4.1}{2} + 9.315$$

$$= 4.5 + 9.315 - 2.05$$

$$= 13.815 - 2.05$$

$$= 11.765$$

$$\begin{array}{r} 7.6 \\ - 3.5 \\ \hline 4.1 \end{array}$$

$$\begin{array}{r} 2.3 \\ \times 4.05 \\ \hline 9.315 \end{array}$$

$$\begin{array}{r} 2 \overline{)41} 20.5 \\ \underline{40} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

$$\begin{array}{r} 4.500 \\ + 9.315 \\ \hline 13.815 \\ - 2.050 \\ \hline 11.765 \end{array}$$

5

$$\text{i) } 2\frac{1}{2} = \frac{5}{2}$$

$$\begin{aligned} 2\frac{1}{2} + \frac{1}{5} &= \frac{5}{2} + \frac{1}{5} \\ &= \frac{5 \times 5 + 1 \times 2}{10} = \frac{27}{10} \end{aligned}$$

$$\begin{aligned} 2\frac{1}{2} \div \frac{1}{5} &= \frac{5}{2} \div \frac{1}{5} \\ &= \frac{5}{2} \times 5 = \frac{25}{2} \end{aligned}$$

$$\text{So, } \frac{2\frac{1}{2} + \frac{1}{5}}{2\frac{1}{2} \div \frac{1}{5}} = \frac{27/10}{25/2}$$

$$= \frac{27}{10} \times \frac{2}{25}$$

$$= \frac{27}{125}$$

$$\text{ii) } \frac{3.5 \times 0.24}{0.21} - 0.037$$

$$3.5 = \frac{35}{10} = \frac{7}{2}$$

$$0.24 = \frac{24}{100} = \frac{6}{25}$$

$$0.21 = \frac{21}{100}$$

$$= \frac{\frac{7}{2} \times \frac{6}{25}}{\frac{21}{100}} - \frac{37}{1000}$$

$$= \frac{7}{2} \times \frac{6}{25} \times \frac{100}{21} - \frac{37}{1000}$$

$$= 4 - \frac{37}{1000}$$

$$= 4 - 0.037$$

$$= 3.963$$